of these practices, of course, were competitive DSL providers upon whom many ISPs are dependent for high speed access. Indeed, the Commission has recently—and quite rightly—concluded, not merely that it should not forbear from regulating CLECs, but that it was necessary to *strengthen* the very rules it adopted just last year because "some incumbent LECs' collocation practices continue to impede competition." *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket Nos. 98-147 et al., Order on Reconsideration and Second Further Notice of Proposed Rulemaking in CC Docket No. 98-147 and Fifth Further Notice of Proposed Rulemaking in CC Docket No. 96-98 (Aug. 10, 2000), ¶ 3. (Order on Reconsideration).

Having concluded just a few months ago that its rules were not strict enough to protect DSL providers who compete with ILECs, it would be inconsistent for the Commission to consider forbearing from regulation of advanced telecommunications as a means to "preserve" competitive neutrality between cable companies and local exchange carriers. Both the cable modem platform and DSL technology permit consumers high speed access to Internet service. They serve the same function, albeit utilizing different facilities. The Commission itself describes the importance of its collocation rules to ensure that the customer has "a choice of LECs from which to purchase advanced services." Order on Reconsideration at ¶ 10. Giving customers the same choice of ISPs should be an equally important regulatory priority for the Commission.

Internet service are plainly a focus of the Commerce Department's report, but as the Report also notes, "[a]t each income level, rural areas lagged behind urban and central city areas." Report, Appendix D.

Even where it is available, of course, DSL provides at best a duopoly in the provision of high speed transmission service alternatives for ISPs and their customers[56]. Leaving consumers to the mercy of such limited competition through forbearance cannot qualify as a reasoned regulatory response. The only logical means to preserve competitive neutrality—as the Commission's own policy commands—is to order non-discriminatory access *and* to redress complaints that the access practices of cable companies "continue to impede competition" (Order on Reconsideration) with the same vigor the Commission has exhibited in regulating ILECs. Indeed, until now the Commission, by its inaction, has impeded, not preserved competitive neutrality. It would be hard for a dispassionate observer to conclude otherwise.

2. Forbearance Would Harm Rural and Low-Income Consumers

One of the greatest potential benefits of open access is its ability to extend the reach of broadband into rural and poor urban neighborhoods and to expand the use of broadband beyond traditional Internet browsing. In defense of restrictive access, cable companies argue that their affiliates will offer unrestricted access to Internet content. Thus, they argue, restrictions on access to unaffiliated ISPs will not harm consumer choice. But this argument fails on several levels.

First, and most important to rural and low-income urban consumers, the cable company's argument assumes a static, narrow definition of Internet service. Unrestricted access to Internet content is important, to be sure. However, Internet service consists of more than web browsing.

---

[56] *See* Mason Report at 1. *Attachment* 15. For some residential users, DSL is available at speeds approaching that of the cable modem platform. The Vermont Telecommunications Plan notes, however, that DSL for many homeowners in Vermont is offered at speeds of 640 kbs, far below the typical speed of a cable modem. While such speeds are a vast improvement over dial up access, they are not adequate to support streaming video at a quality that can compete with programming from the cable companies and their affiliates. Thus, even if DSL were available to all cable subscribers, forbearing from the regulation of cable access would thwart the development of Internet-based competition for educational and commercial video programming carried by the cable companies, a point discussed earlier in these comments.

As mentioned earlier, Internet providers are distinguishable from each other in terms of the provision of proprietary content, web-hosting policies, e-mail services, access to news groups and caching, among other things.

Second, restrictions that the cable companies have insisted upon undermine the quality of potential Internet service to the particular disadvantage of rural and low-income urban users. The cable companies have insisted on restrictions on streaming video. *See, e.g.,* Time Warner term sheet, *Attachment* 9; Statement of Daniel Sommers, *Attachment* 4 (December 14, 1999 *USA Today*). This type of limit not only constrains consumer entertainment choice and competition for traditional television programming, it also limits the opportunities for home commuting and video teleconferencing. Indeed, some cable companies have placed limitations on uploading by home users designed to steer customers to separate business services sold by their telephone company affiliates.[57] Adelphia, for example, offers its *Powerlink* service in Vermont only "for home and family use"; barring, by tariff, the use of web space for "business oriented web pages." *Mountain Cable Co., VPSB Tariff* No. 2, §3, Subsection 9 (*Attachment* 3).

What this means, as a result, is that small businesses and telecommuters will be unable to use the affiliated ISP's service up to the capability of the network. By being denied the choice of ISPs who are willing to make their services available for such uses, the cable companies harm economic development.

The problem is compounded if customer access to alternative ISPs can occur only as the result of the cable companies' willingness to negotiate with rival ISPs regarding the terms of access. With per subscriber charges of $30, $40 and more per month, such as those suggested in Time Warner/AOL term sheet, high-speed Internet access will be out of the reach of most low-

income users. On the other hand, cost-based access might be priced in the neighborhood of $10 per month or less.[58] At this rate, employers might well find it economic to subsidize access to employees, extending employment opportunities and eliminating commuting costs and child care expenses for those least able to afford them.

[57] *See Vermont Telecommunications Plan 2000 (August 2000), www.state.vt.us/psd/te100.htm* at 3-43.

[58] Statement of Stephen Heins of NorthNet, *Attachment* 2.

3. Forbearance Would Retard the Development of Advanced Telecommunications Capability.

The NOI asks whether cable modem service is an advanced telecommunications service and whether there are any differences between advanced telecommunications capabilities, telecommunications facilities, and telecommunications services. *NOI* ¶ 22. The answer to both of the questions is yes. Moreover, as discussed below, defining the cable modem platform as an advanced telecommunications service, captures uses of the cable modem platform beyond a transmission mechanism for Internet service. The term "telecommunications services" is already defined in the statute as the offering of telecommunications to the public for a fee, regardless of the facilities used. 47 U.S.C. §153(46). Telecommunications refers to transmission of user-specified information to user-specified location(s) without a change in the form or content of the information. 47 U.S.C. §153(43). The term "telecommunications facilities" appears to connote the equipment, both software and hardware, used to provide telecommunications service. The term "advanced telecommunications capability" is an attribute of the transmission mechanism (in terms of transmission speed) used to provide the telecommunications service.

The cable modem platform is an advanced telecommunications capability as that term is defined under section 706 of the 1996 Telecommunications Act. Section 706(c) provides:

> (1) ADVANCED TELECOMMUNICATIONS CAPABILITY. - The term "advanced telecommunications capability" is defined without regard to any transmission media or technology, high as speed, switched, broadband telecommunications capability that enables users to originate and receive high quality voice, data, graphics, and video telecommunications using any technology.

Pub.L. 104-104, Title VII, §706(c), Feb. 8, 1996, 110 Stat. 153.

The Commission has expanded upon this definition. The Commission denotes as " 'high speed' those services with over 200 kilobits per second (kbps) capability in at least one

direction." *Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion* , Second Report at ¶ 10, CC Docket No. 98-146, (rel. Aug. 21, 2000) ("*Second Broadband Report*"). The adopted bandwidth, which is approximately four times faster than the Internet access received through a standard phone line, is sufficient "to provide the most popular forms of broadband—to change web pages as fast as one can flip through the pages of a book and to transmit full-motion video." *Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, at ¶ 20, CC Docket No. 98-146, (rel. Feb. 2, 1999) ("*First Broadband Report*"). Moreover, the Commission interprets the phrase "enables users to originate and receive . . . telecommunications" as requiring two-way telecommunications. *Id.* at ¶ 21. The two-way communication and "switched communication" capabilities are key to advanced telecommunications capability. Accordingly, "neither a conventional cable television system nor a digital television signal, by itself, would be broadband within the statutory definition, for they are both one-way." *Id.* at ¶ 20.

In the *Second Broadband Report*, the Commissioned refrains from using the term broadband to describe any of the categories of services on facilities described in the report, as it had done in the *First Broadband Report*, *Id.* at ¶ 11. Instead, it defines "advanced telecommunications capability" as the capability to support a speed (*i.e.* bandwidth) in excess of 200 kbps in both the downstream and the upstream directions. In effect, advanced telecommunications capability, which is capable of 200 kbps or greater in both directions, is a subset of high speed services. *Id.*

As stated, when cable operators offer Internet access, they are providing a telecommunications service. The issue then is whether the telecommunications service they provide qualifies as advanced telecommunications capability. They do.

Cable operators have the capability to provide Internet access at maximum downstream speed of 27 Mbps and maximum upstream speed of 10 Mbps. *Second Broadband Report* at ¶ 33. These speeds are well in excess of the 200 kbps required to satisfy the "high speed" criterion of advanced communications capability. Moreover, cable operators typically significantly upgrade their facilities to accommodate transmission of Internet service. Such upgrades include upgrade of both their fiber optic and coaxial cable facilities and increase the system's transmission capacity to 550 MHz or to 750 MHz. *Second Broadband Report* at ¶¶ 30-31. In addition, the cable operators install equipment—such as routers, switches and cable modem termination systems—that enables transmission of digital data packets. *Id.* Accordingly, the high speed capacity, combined with all of the other features, makes the cable modem platform an advanced telecommunications capability.

Defining the cable modem service or the cable modem platform as an advanced telecommunications capability captures all uses of cable modem service beyond the provision of Internet access. Indeed the Commission has recognized that the breadth of opportunities brought about by advanced telecommunications capability also permits telecommuting, consumer-originated broadcasting, distance education, desktop publishing and healthcare. *Id.* at ¶ 12. Specifically:

> With advanced telecommunications capability consumers can take advantage of advanced services that allow residential and business customers to create and access content, sophisticated applications, and high-bandwidth services. For example, advanced services allow businesses and their customers quickly to exchange data over long distances, doctors to provide real-time diagnosis to patients in remote areas, people with hearing and speech disabilities to

> communicate through video links using sign language, teachers to create interactive multimedia learning environments for their students, and individuals to have faster, more robust access to the Internet.

Second Broadband Report at ¶ 12. Thus while Internet access is a useful function of the cable platform, as an advanced telecommunications capability, it is useful for many other purposes. Forbearance from regulation of cable modem service would stifle competitive advancements in the provision of services that rely on advanced telecommunication capability for delivery to consumers.

4. Forbearance Would Deprive the Public of the Benefit of Television-Like Programming that ISPs Can Provide in Competition with Cable Companies.

Another way in which unaffiliated ISPs are likely to benefit consumers is through the provision of Internet-based streaming video and video conferencing. Indeed, absent an open access regime, cable operators are likely to do everything in their considerable power to thwart the development of Internet-based streaming video that competes with their core cable business of video programming. (The statements of AT&T executives, discussed infra, and the Time Warner term sheets (discussed *supra*, bear this out.) Nor, absent regulatory compulsion, are cable companies who plan to enter local telecommunications markets likely to permit ISPs to offer video conferencing or telecommuting services to small businesses or employees. (*See Mountain Cable Company, VPSB Tariff No. 33.4 § 9.1, Attachment* 3. The cable companies, while opposing streaming video, have made the disingenuous argument that ISPs do not offer a real substitute for video programming anyway. In *Internet Ventures*, *supra*, Comcast argued that ISPs cannot offer video programming comparable to broadcast television because the Commission itself has stated that "streaming video... is 'not comparable in quality to broadcast

video' in a technological sense."[59] Comcast went on to quote the Commission's statement in the Fifth Competition Report that "industry observers believe video streaming is unlikely to... compete with traditional video media in the foreseeable future."[60]

The argument that these statements by the Commission render moot any concern about retarding the development of new services makes no sense. The Commission's recitation of industry prognostications—even its belief at the time in their validity—is irrelevant if, *in fact*, streaming video can now provide a picture of a quality comparable to that of broadcast television. As VDPS pointed out in its initial comments in *Internet Ventures*, *supra*, that *is* the case where ISPs have access to the high speed connections possible over cable facilities.

The convergence of broadcast and Internet technologies means that differences in the video experiences between broadcast television and Internet video over cable are disappearing. Beyond the image itself, the total programming experience possible with digital television looks increasingly like Internet video programming. As Internet Ventures noted in File No. CSR-5407-L, the Commission's rules permit television broadcast stations to provide telecommunications services such as the "transmission of data, processed information, or on any other communication in either a digital or analog mode" on the vertical blanking interval and in the visual signal.[61] In other words, with digital transmissions, TV moves into the computer age. Digital TV is TV recorded and transmitted digitally; TV that can come with web pages or come from web pages. It is enhanced with other media elements and interactivity. It can be watched on a TV or a PC. One can no longer think of cable TV as it has been in the past—delivering

---

[59] Comments of Comcast Cable Communications at 6, citing Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Fourth Annual Report, 13 FCC Rcd. 1034, 1094 at ¶ 97 (1998).

[60] Fifth Competition Report, 13 FCC Rcd. ¶ 105 at 24350-51 (1998).

[61] 47 C.F.R. §73.646(a).

only the cable TV channels we know in the formats we grew up with—but instead we must recognize cable TV as it is and as it will be--delivering all that we are familiar with plus new television formats we are only beginning to see emerge on the cable dial. *Shapiro Affidavit, Attachment* 1, at ¶ 4, ¶ 11 and ¶ 12. These new formats include digital television with accompanying data streams, television for viewing on personal computer monitors, and television from the cable's Internet channels.[62]

With the advent of digital technology, there is no longer any scarcity of channels, another factor that will hasten convergence of Internet and broadcast video programming. Total channel capacity after rebuild of the Adelphia system, for example, is 413 channels. (The additional 200 MHz digital capacity gained with rebuild yields 33 six MHz channels, when compressed at a 10 to 1 ratio = 333 channels + 80 analog channels = 413 channels.) *Shapiro Affidavit* at ¶ 5. This number of channels, in fact, is expected to increase significantly with improved compression techniques and eventual digitalization of the analog channels, yielding ten or more digital channels from each former analog channel's bandwidth. *Id.* Even the bandwidth hungry High Definition Television (HDTV) digital format fails to fill a single 6 MHz analog channel; four HDTV signals can be transmitted over a 6 MHz channel. *Id.* All this suggests that broadcast television and Internet video programming will only continue to merge in their comparability as

[62] Intel, for example, is working with NBC, PBS and others to provide Web pages over the vertical blanking interval (VBI) of a regular broadcast or cable television transmission. Intercast could provide statistics with sporting events, recipes with a cooking show, print information with a news report, or coupons with advertisements. Shapiro Affidavit at ¶ 9. PBS ran its first Intercast programming on November 10 and 11, 1998, in a Ken Burns documentary about Frank Lloyd Wright that featured accompanying data streams for the personal computer that were transmitted simultaneously with the show. The PBS Kids Channel launches in September, 1999 with Intercast capabilities as a basic component of the new programming. The programming is aimed at PCs that will be equipped with an Intel receiver card coming to retail suppliers this summer. An alternative to a set top box, it will enable PCs to receive both the digital television transmissions and the accompanying data streams. (See Reveaux, Tony, "Kids Lead PBS' Digital Charge," TV Technology, 4/7/99, p. 18.) See Shapiro Affidavit at ¶ 9.

the features and benefits of both are integrated into video programming of the future[63] - - if cable systems are required to provide non-discriminatory access.

The programming content of Internet video over cable is comparable to that of traditional video programming over cable. According to Internet Ventures, its subscribers could activate a "prominent button on the home page of Internet Ventures' ISP's to access the PeRKInet® portal," which will provide them access to 75 Internet-delivered television broadcast stations from both international and national sources.[64] International and out-of-region broadcasts, VDPS would note, are not typically offered by cable providers as part of their channel line up and their availability from Internet providers using cable can significantly add to programming diversity. *Shapiro Affidavit* at ¶ 13. *Attachment* 1.

In Case No. CSR-5407-L, Internet Ventures provided other examples of the overlap in video programming available on the Internet and on broadcast television that we will not repeat here. Rather, we simply emphasize that there can be no question that the Internet offers a significant and substantial amount of live and on-demand video programming that, with high speed access, is capable of competing with programming provided by cable companies.[65]

---

[63] *Shapiro Affidavit* at ¶ 11, *Attachment 1*. One leading brand, Cisco's IP/TV, is a comprehensive "client server software application that transmits video programs, both live and pre-recorded to desktop PCs over enterprise IP networks." It is extremely bandwidth efficient and works well over 10 or 100 Base T Ethernet, and cable modems. Using IP Multicasting, it can "transmit a scheduled video broadcast to an unlimited number of viewers without straining network performance." It enables viewers to type in questions and it can broadcast Powerpoint slide presentations alongside video images of a speaker, for example. *See Shapiro Affidavit* at 1, *Attachment 1*.

Hughes Electronics, the owner of DirecTV – plainly a provider of video programming, "is in negotiations with Broadcast.com to provide its current Direct PC satellite Internet service users with custom tailored programming....Broadcast.com has twice before worked with Direct PC on special projects. The latest, a special 400 kbps video feed of a Forbes magazine event designed specifically for Direct PC users, took place earlier this month." (Bannan, Karen J., "Hughes Beams Up Two-Way Satellite," Inter@ctive Week, March 22, 1999, p. 7). Shapiro Affidavit at ¶ 10. Attachment 1.

[64] *See* Internet Ventures, Inc., News Release (April 20, 1999). See Exhibit B of the IVI petition for a printed copy of the PeRKInet ® channel line-up (as of May 17, 1999).

[65] Dobie Gillis is on weekday mornings at http://www.broadcast.com/television/shows/dobiegillis/. NASA TV transmits a live video feed 24 hours a day on http://www.broadcast.com/events/nasa/. CSPAN can be watched on

Consumers will not benefit fully from these developments, however, unless the Commission ensures open access that not only guarantees comparable treatment between affiliated and unaffiliated ISPs, but also does not favor the cable company's video programming or telecommunications business.[66]

Cable companies plainly fear this competition. It is one of the reasons they have opposed true open access. Leo J. Hindrey, Jr., former CEO of AT&T Broadband and Internet Services, made statements that both (1) contradict claims that ISPs cannot offer streaming video comparable video programming available over broadcast television and (2) underscore the need for mandatory open access. At a television forum, Mr. Hindrey stated that he would not allow streaming video to undercut AT&T's cable business:

> I am not going to allow it to trash the fundamental model without being a participant in the debate on how it evolves . . . . I am not against streaming, but I am against streaming that destroys the business that I have spent billions and billions of dollars, ten of billions building. So I am not going to let that happen. That would be foolish.[67]

Not long after Mr. Hindrey's departure, his successor, Mr. Daniel Somers, made the same point. He described AT&T's opposition to the use of its cable lines to transmit Internet-based

---

cable TV or over the Internet at http://www.cspan.org/. Statehouse proceedings in the state of Washington are available for viewing at http://www.TVw.org. See http://www.broadcast.com for listings and links to video programming available online. Every website has the potential for its own TV broadcast and the list of channels is growing daily and is certain to far exceed that of cable television.

[66] Regular dial up Internet service, by contrast, offers no realistic prospect of offering competition in video programming for the cable companies. According to the National Cable Television Association Guidelines, presented by Adelphia in response to discovery requests VDPS submitted in proceedings before the VPSB, cable reduces the time to transmit a single 1 Mb graphic image from 5 minutes over a telephone line with a 28.8 kb/s modem to 1 second using a 10 Mb/s cable modem. "The cable industry's broadband network enjoys a significant advantage over competitive alternatives for accessing the vast amounts of information available on the Internet." (DPS 2-15 /FCC docket 98-146, 1A(1)) *See Shapiro Affidavit* at ¶ 6, *Attachment 1.*

[67] Ted Hearn, "AT&T's Hindrey: Streamed Video Could Trash Cable," Multichannel News at 25 (October 4, 1999) (Exhibit D thereto).

movies and TV shows as follows: "AT&T didn't spend $56 billion to get into the cable business to have the blood sucked out of our vein."[68]

The video provided over the Internet is comparable to that offered by television stations, the very programming also distributed by cable systems. If "streaming video" were not comparable to the video programming service that Mr. Hindrey has "spent billions of dollars, tens of billions building," it could pose no competitive threat to cable, much less one that would "destroy the business." Indeed, the comments of Mr. Hindrey and of his successor make clear that the cable companies' strategy to limit streaming video on the Internet services provided by their affiliates was designed to limit competition in the video type programming that ISPs can provide.

5. Limited Actual or Potential Competition to Cable System Operators Does Not Justify Forbearance and Is Inconsistent With the Commission's Own Definition of "Effective Competition."

The Commission posits two conditions under which open access might be mandated: (1) where the "cable operator is the only facilities-based provider of high-speed services and it owns or controls the ISP providing service to end-users" and (2) where "there is an actual or potential competitor to the cable operator." *NOI* ¶ 42. The Commission then poses a series of questions related to the second scenario, presumably because the answer to the first one is obvious—namely that if the cable operator has a complete monopoly on facilities-based provision of high-speed services open access must be mandated. This section of these comments, therefore, will address only the questions posed with respect to the second scenario.

The basic question the Commission asks is "should the Commission intervene if there is *an* actual or potential competitor to the cable operator." *NOI* ¶ 42 (emphasis added.) The

---

[68] *See Attachment 4* (December 14, 1999 edition of *USA Today).*

wording of the question suggests that the Commission believes the presence of a single alternative provider of high-speed services could alter the conclusion about whether open access requirements for cable operators is needed. By any economic standard, the presence of an incumbent and a single competitor would not be sufficient to create a competitive market. The existence of a single *potential* competitor is even farther removed from a competitive market. The studies cited elsewhere in this pleading discuss the fact that, at best, cable operators will face significant competition only from DSL providers. In other words, they will be competing in what would effectively be a duopoly. *See Micronomics Report, Attachment 10.* Even the presence of another significant competitor, however, would not alter the conclusion that open access is essential on cable systems. The history of regulation is replete with examples.

Consider, for example, the leased access provisions of the Act. Cable operators face competition in the provision of video programming from over-the-air broadcasts. Indeed, over-the-air broadcasts, it is safe to say, can reach a higher percentage of the population than DSL service. This fact notwithstanding, Congress has concluded that cable companies have market power in the provision of video programming and has mandated that cable companies make a portion of their facilities available to independent video programmers. The logic that the mere existence of an alternative provider would justify abandoning open access would mean that there would be no reason to mandate leased access on cable facilities since over the air broadcasts exist as an alternative.

Similarly, the notion that a single new competitor serving some limited segment of the same market as the incumbent, would constitute viable competition, is inconsistent with the Commission's own application of the "effective competition" provisions of the 1996 Act. In "Implementation of Cable Act Reform Provisions of the Telecommunications Act of 1996," CS

Docket No. 96-85, Report and Order (Released March 29, 1999), 64 FR 35948 (July 2, 1999), ("Cable Act Reform Order"), the Commission addressed the question of when a cable company would be subject to "effective competition" and hence exempt from rate regulation. More specifically, it addressed the application of the 1996 Act's Amendment to Section 623(l) of the 1992 Cable Act, 47 U.S.C. § 543(l)(1)(D), governing competition from local exchange carriers (or their affiliates) offering video programming over LEC facilities. The Commission emphatically rejected arguments that cable companies would face "effective competition" from LECs if customers in *any* portion of their service area could choose LEC video programming. *Id.* ¶ 9. "So lenient a test," it stated, "could have the unfortunate result of allowing a dominant cable company to raise rates, unabated by regulation or genuine competition, whenever an LEC delivers video signals to just one home in the franchise area." *Id.* "Until [effective] competition exists," it added, "monopoly providers of services must not be able to exploit their monopoly power to the consumer's disadvantage." *Id.* For effective competition to exist, it concluded, "the LEC's service must substantially overlap the incumbent cable operator's service in the franchise area." *Id.* at ¶ 10.

It bears emphasis that LEC competition in the provision of video programming depends on the use of DSL or like technology. Thus, "effective competition" for cable-delivered video programming does not exist nearly anywhere in the United States, at least in part, because DSL is not widely-enough deployed.[69]

---

[69]As Mr. Shapiro's affidavit in Internet Ventures makes clear:

The DPS has sent 45 questions on DSL to every local exchange carrier (LEC) in Vermont. Current plans to offer DSL service in Vermont are limited to Vermont Telephone Company, which plans to offer the service throughout its service territory, and Bell Atlantic ("BA"), which plans to offer it out of its Burlington and Essex switches. Other companies express interest but their plans remain speculative. None of the companies in Vermont have filed tariffs with the FCC, a necessary step prior to offering service, inasmuch as DSL service falls under interstate jurisdiction.

Regulation of DSL access teaches the same lesson. The Commission requires facilities-based telecommunications providers to offer non-discriminatory access to their facilities. The beneficiaries of this policy include DSL providers that compete with the local telephone companies to provide high-speed access to Internet service and, more importantly, ultimate consumers. If the mere existence of alternative high-speed providers were sufficient to prove that open access is not required, then the existence of cable modems should be sufficient to justify a conclusion that open access for DSL providers is unnecessary.

In many metropolitan areas around the country, gas distribution companies have long been connected to more than one interstate natural gas pipeline. *Lynchburg Gas Co. v. FPC*, 336 F. 2d 942, 949-50 (D.C. Cir. 1964). And, while interstate pipelines must receive certificates for authorization to provide transportation service, the certificates are non-exclusive. *Panhandle Eastern Pipe Line Co. v. FPC*, 169 F. 2d 881, 884 (D.C. Cir.), *cert. denied*, 335 U.S. 854 (1948).

Several technical problems have also been identified which will make deployment problematic. Service provisioned out of the central office is limited to distances of 18,000 feet and will not travel over digital loop carriers (DLC). (25% of BA lines travel over DLCs and these are not eligible for DSL.) Old copper may also be problematic and limit the number of lines eligible for DSL service. Indications are, therefore, that DSL deployment will be limited and the cable platform will be the only available broadband drop into most cable homes in Vermont for the foreseeable future. Most residents living in Adelphia territory will be able to have broadband access from Adelphia, but outside of downtown areas in the larger markets, few Vermonters can expect an alternative broadband service over copper in the next five years.

Shapiro Affidavit at ¶ 7, ¶ 8, Attachment 1.

Little has changed since the time Mr. Shapiro submitted his 1999 affidavit. *See Vermont Telecommunications Plan 2000 (August 2000), www.state.vt.us/psd/te100.htm* at 2-53-58. ("Because DSL is both distance and "loop make up" sensitive, there are technical qualifications as to how many lines would actually be eligible for any form of DSL. Currently 26% of Bell Atlantic's lines travel through digital loop carriers and would therefore be unable to provide DSL provisioned out of their central offices, as Bell Atlantic plans. An additional unknown percentage of lines would also be disqualified due to lengths greater than 18,000 feet from the central office. Other lines, numbers unknown, would be unable to carry DSL due to copper quality, shielding, crosstalk and interference. These DSL issues recall the problems of ISDN deployment, such as distance from the central office (CO) and sufficient customer demand to drive deployment of the interface from the central office to nodes closer to customers.")

As the Vermont Telecommunications Plan 2000 concludes, the problems inherent in DSL deployment mean that Vermont is likely to have only limited DSL availability for the immediate future. Vermont Telecommunications Plan, *supra* at 2-57. In Wisconsin, over 90 percent of customers with high speed access rely on cable. *See attached* Statement of Stephen Heins. *Attachment 2.* More importantly, even assuming the widespread availability of DSL (it is not even available to the signatories of this pleading who all reside in large

This fact notwithstanding, the rates, terms and conditions of service provided by natural gas pipelines continue to be regulated under the Natural Gas Act.

The history of electric power regulation is similar. A single electric utility typically provides distribution of electric power to end-users in a given franchise area. And, although, by state law, utility franchises are typically nonexclusive[70] and although utilities face potential competition from municipalities that have the power of eminent domain,[71] the rates, terms and conditions of distribution service continue to be regulated. Until early in the last century, the predominant means of consumer protection in the electric industry was the threat that an existing utility would be displaced when its franchise expired or if the municipality in which it was located exercised the power of eminent domain. P. Fox-Penner, "Electric Utility Restructuring: A Guide to the Competitive Era," in Pub. Util. Rep. 95 (1997) ("the awarding of franchises, for often for short periods or non-exclusively to promote competition, was the primary means of controlling the industry."). States ultimately concluded that, while this competition was helpful, electric distribution possessed natural monopoly characteristics and that while franchise competition ought to be nurtured, regulation was nonetheless necessary.[72] Indeed, there is a recurrent theme in utility regulation reflecting the notion that, even in a regulated industry competition should play a significant part. *See, e.g., Otter Tail Power Co. v. United States*, 410 U.S. 366 (1973); *Silver v. New York Stock Exchange*, 373 U.S. 341 (1963); *McLean Trucking Co. v. U.S.*, 321 U.S. 67, 86 (1944); *Georgia v. Pennsylvania R.R..*, 324 U.S. 439 (1945);

---

metropolitan areas), there is no principled argument that competitive neutrality should be preserved by regulatory forbearance.

[70] *See Tenn. Elec. Power Co. v. TVA*, 306 U.S. 118 (1939).

[71] *Puget Sound Power & Light Co. v. Seattle*, 291 U.S. 619, 626 (1934).

[72] S. Breyer, Regulation and Its Reform, 15-16 (1982); *Farmers Union Central Exchange, Inc. v. FERC*, 734 F. 2d 1486, 1508 (D.C. Cir. 1984), cert. Denied, 469 U.S. 1034 (1984).

Northern Natural Gas Co. v. FPC, 399 F.2d 953 (D.C. Cir. 1968); *Nat'l. Broadcasting Co. v. United States*, 319 U.S. 190, 223-24 (1934); *United States v. Radio Corp. of America*, 358 U.S. 334, 351 (1959); *Metropolitan Television Co. v. FCC*, 289 F.2d 874, 876 (D.C. Cir. 1961); *General Tel. Co. v. U.S.*, 449 F.2d 846, 858 (5th Cir. 1997).

The lessons of these experiences are applicable here. A competitive market in the provision of high-speed access does not exist and is not likely to exist in the foreseeable future. Mandating open access over cable systems in these circumstances is therefore necessary. Regulation, moreover, is not at all inconsistent with the promotion of regulatory policies that will encourage development of competition for cable companies in the provision of high-speed access. The Natural Gas Act encourages development of competition between pipelines, but recognizes that each pipeline continues to exert market power sufficient to justify regulation. Similarly, the fact that electric utilities need to be regulated does not mean that regulators do not encourage competition to keep the regulated utility on its toes. *See* Reiter, Competition Between Public and Private Distributors in a Restructured Power Industry, 19 Energy L.J. 333 (1998). More ISP "pipes" into the home is also a good thing, but until there is a competitive market for high-speed access, there will be a need for regulation.

Two subsidiary questions contained in the NOI suggest some possible confusion about this basic concept. For example, the Commission asks whether there would be any competitive harm from the denial of open access "if ISPs seeking access to the cable modem platform offer services that are not different from or more attractive to consumers than those provided by the affiliated ISP." *NOI* ¶ 42. We already know that ISPs differ greatly from one another (in caching, proprietary content, offers of newsgroup access, web space, web hosting, etc.), but even

if alternative ISPs would offer the same services as the affiliated ISP, consumers would at least be interested in whether competitors would offer those services at a lower price![73]

The Commission has also asked how imposing open access would "comport with the Commission's historical policy of not regulating the Internet." No proponent of open access, so far as we are aware, has remotely suggested any intent to regulate the content of the Internet or to regulate Internet service. On the contrary, they are in unanimous agreement that Internet service ought to remain an information service unregulated by the Commission. As the Ninth Circuit has stated, however, what cable modem affiliates provide is Internet service bundled with a telecommunication service, i.e., the transport medium by which the Internet service provider gains access to the consumer. It is as simple as that.

V. Arguments Questioning the Feasibility of Open Access Should be Rejected.

A. Technological Feasibility.

An open access regime must, of course, be consistent with technological limits. It bears emphasis, however, that monopolists often seek refuge in arguments of technical infeasibility when confronted with threats to their market share. *See, e.g., Otter Tail Power Co. v. U.S.*, 410 U.S. 366, 377 (1973); *MCI v. AT&T*, 708 F.2d 1081, 1133 (7th Cir. 1983). The Commission should therefore treat any such claim with healthy skepticism. There is, as important, ample evidence to support the conclusion that cable systems are capable of supporting a robust, competitive ISP market:

> While the approach taken by Canadian regulators plainly cannot govern the Commission's decision here, it is instructive on this issue. In contrast to our domestic experience to date, Canada has mandated that cable companies offering Internet service must provide access to non-affiliated third party providers of

[73] The question, in fact, seems to disregard what the Commission must already know. ISPs differ from one another on a whole range of services, from web hosting, to proprietary content, to streaming video alternatives. Price, of course, is a major distinguishing feature as well.

> Internet service.[74] The Canadian experience is relevant because both US and Canadian cable Internet providers will be operating under the same DOCSIS cable modem platform standards.

See Shapiro Affidavit, Internet Ventures, Case No. ISSR. 5407-L at ¶ 19. *Attachment 1.* What works technically for Canadian systems, in other words, will also work for the American systems.

The Vermont Telecommunications Plan 2000 reaches a similar conclusion:

> Open Internet access over cable is mandated in Canada; the technical procedure for achieving a routing solution is based on connecting one router hop beyond the CMTS. 303 Regional Cable Systems has been providing its customers a choice of up to four ISPs since September 1999 at one of its three systems where open access has been implemented. Canada conforms to DOCSIS standards and a DOCSIS certified cable modem purchased for use in Vermont will work over Canadian cable systems. Likewise, packet switching solutions for a DOCSIS-compliant Canadian cable network will work the same for an American one.

Vermont Telecommunications Plan, *supra* at 3-44.

Attached as *Attachment 13* to these comments is the August 9, 1999 affidavit of Frederick Enns submitted in *Internet Ventures, supra*. As Mr. Enns, Chief Technical Officer for Hybrid Network, Inc. notes, there are "two wide solutions that enable any operator of a network to implement leased access" (affidavit, ¶ 5): "source routing" and "tunnelling." *Id.*, ¶¶ 9-13. Both methods allow an essentially unlimited number of ISPs to share a single cable channel, with the customer designating its choice of ISP. *Id.* "Source routing requires no new technical developments and it is compatible with the network equipment of the cable operator." *Id.* at ¶ 10.[75] Tunneling also, involves use of existing technology, but does require software updates to

---

[74] *See Regulation Under The Telecommunications Act Of Cable Carriers' Access Services*, Canadian Radio-Television and Telecommunications Commission (CRTC)File No.: 8697-C12-02/98 (July 6, 1999).

[75] Source routing has been widely implemented in Internet access routers. Each ISP subscriber has an address ("source address") that is associated with a particular ISP. The *routers* filter packets by identifying the address that is associated with the subscriber's particular ISP and directing the Internet packet to that particular ISP. *See Affidavit of Frederick Enns* at ¶ 9.

the cable modem. *Id.* at ¶ 13.[76] The details of both approaches are discussed in Mr. Enns' affidavit.

When used in the cable modem connection context, *interconnection* refers to the junction point at which the unaffiliated ISP connects with the cable network in order to provide Internet access. To understand the junction points where ISPs can interconnect along the cable network, it is first necessary to detail the design of a data-capable cable network. The *headend* is the local cable facility that receives the satellite signals from the satellite network operated by the cable operator. Located at the *headend* is the *cable modem termination system* ("CMTS"). The CMTS is a type of *router* that moves Internet packets around. The signals are transmitted via *trunks* stretching from the *headend* to various sections of the cable franchise area (typically a city or county), with a *branch network* extending from these *trunks* going through the neighborhood to *tap* the *cable box* or *set-top box* in each house. Between the *headend* and the *trunks,* there are *nodes,* which allow fewer branches and houses to be fed by each *trunk.*

The two most reasonable places for interconnection to occur are at the *headend* or one router hop beyond the *headend.* The CMTS, located at the *headend,* is the "primary interface node for the local cable Internet infrastructure" and is "the most likely point to interconnect independent ISPs." See The Architecture of Internet 2.0, www.edventure.com/release_I

---

[76] Tunneling can be used to provide leased access over a shared cable plant channel. Under tunneling, an IP packet addressed to some computer in the Internet is placed inside a packet addressed to the ISP operator of the subscriber. *See Affidavit of* Frederick Enns at ¶ 12. Attachment 13. The cable operator's router then sends the IP packet to the ISP using its normal destination routing algorithm. Each ISP receives packets only from its subscribers. It then takes these packets, removes the outside envelope and sends the inside packet to the destination address. *Affidavit of Frederick Enns* at ¶ 12. Attachment 13.

Tunneling requires additional software in the cable modem to add the tunneling envelope upstream, but most cable modems on the market today, have the capability to receive new software programs over the cable network. *See Affidavit of* Frederick Enns at ¶ 13. Tunneling is generally used by businesses for Intranet purposes. Even though businesses share the network connection of the Internet, they are given the appearance of a virtual private network. *See Affidavit of* Frederick Enns at ¶ 11. Attachment 13.

/cable.html. ISPs can connect to different portals at the CMTS, at which point the Internet packet received from the subscriber's home would be filtered through the CMTS and taken up by the ISP.

Alternatively, unaffiliated ISPs can create private peering relationships "between backbones[77] one router hop beyond the CMTS." *Vermont Telecommunications Plan 2000 (August 2000),www.state.vt.us/psd/te100.htm* at 3-43. These private peering[78] relationships eliminate the congestion at the NAPs by dropping the Internet packet off earlier to the destination backbone where the equipment for both ISPs is located rather than traveling to one of the dozen major exchange points within the U.S. *Id.*

There are two options for ownership of these routers. The first is that the cable company can put a stackable interface router that would be shared by all entrants. *See Shapiro Transcript Before the State of Vermont Public Service Board,* November 4, 1999, (hereinafter "*Shapiro Transcript*") at p. 21. *Attachment 14.* The benefit of this is that if the cable company runs out of ports, it can add another one or the ISP can put in their own router. *Id. Attachment 14.* Alternatively, the ISPs can share at their expense through a point of interface router where the initial ISP would put in a router and allow other ISPs to plug into it. *Id. Attachment 14.* This interface router limits the burden of the cable companies to have enough routers to accommodate all ISPs because the ISPs would be responsible for paying and maintaining the routers, which are then connected to a port in the CMTS. *See Shapiro Affidavit.*

---

[77] Internet backbones are groups of communications networks "managed by several commercial companies that provide the major high-speed links across the country. ISPs are either connected directly to these backbones or to a larger regional ISP that is connected to one. The backbones themselves are interconnected at various NAPs." *Tech Encyclopedia,* www.techweb.com

[78] Peering occurs when one Internet backbone provider transmits or accepts traffic from another national provider.

Generally speaking, the closer the interconnection to the subscriber's home, the faster the data transmission occurs because the data has fewer routers to pass through to get to the Internet. When there are fewer routers to pass through, the information or data is transmitted more directly to the Internet backbone, which results in less traffic along the way. However, given the technical complexity of this matter, deciding which is the technically superior location to interconnect is better decided during a rulemaking procedure.

Under source routing and tunneling, desented earlier, individual subscribers may access multiple ISPs simultaneously. A single channel downstream and upstream can support about 7,500 Internet service subscribers with high speed access. Since the cable plant architecture feeds signals to many individual nodes within the plant, many separate groups of 7,500 subscribers each can be serviced by reserving one channel leased to multiple ISPs. Thus, a cable plant in a metropolitan area with one channel reserved for Internet access can serve over a hundred thousand subscribers. *Affidavit of Frederick Enns* at ¶ 15. *Attachment* 13.

Cable operators should offer the same bandwidth and quality of service to unaffiliated ISPs as to their own affiliates. *Id.* at *Attachment 14.*

Under an open access regime, the cable company would be responsible for network management and the unaffiliated ISP will be responsible for customer service. The goal is for the cable operator to have no control over the Internet content available to subscribers. Each ISP should be in control of the content offered to its individual subscribers. As in telephony, a cable operator's function is to provide the means for transport. By the ISP's maintaining control over the content available to its subscribers, it will be responsible for providing customer service, protecting subscriber privacy and providing Internet access to its subscribers. Only in this way can accountability to the subscriber be ensured.

Having the cable operator control the ISP's homepage could lead to undesirable results. Using the example of Time Warner-AOL (TWC) as representative of the current system, it is clear that open access with no control by the cable operator is needed to ensure quality customer relations and customer privacy.

In its White Paper, NorthNet uses the term sheet provided by TWC to demonstrate that, under the present system, TWC regulates the content of the ISP's homepage and leaves open the opportunity to advertise its services on the unaffiliated ISP's homepage.

> ISP will have sole control of, and responsibility (including without limitation editorial and technical responsibility) for the homepage for the Service, provided however that (a) the home page will be subject to TWC's approval; and (b) at all times during the term of the Definitive Agreement there will be a dedicated availability of prominent above-the-fold areas on the home page of the Service for use by the Operator at its discretion, but which may, without limitation link to content, applications, service and functionality by such Operator.

In addition, the TWC term sheet demonstrates that it wants to control the privacy policy of unaffiliated ISPs so that they conform to the privacy policies of TWC.

> TWC shall use reasonable efforts to comply with ISP's customer privacy policy Practices, provided, however that to the extent ISP's privacy policies are inconsistent with, and in some way a limitation on TWC's current and anticipated business use of such information, ISP agrees to take whatever action necessary to modify its policies with respect to conform with TWC's business practices.

TWC would most likely not be alone in its desire to discourage competition from unaffiliated ISPs. Thus, it is important that cable operators' function be limited to providing the transmission facilities so as not to interfere with the protection of subscriber policy and to deter the imposition of onerous rules by cable operators on the ISPs (which will defeat the purpose of open access). In other words, access is not truly "open" if the cable operator can still control.

If NorthNet or a similar ISP signs the agreement proposed in TWC's term sheet, TWC will have the ability to effectively control the ISP by regulating the content on its homepage,

thereby ensuring that TWC stays ahead of its competitors who lease its cable lines and offers the "better" Internet access.

B. Economic Feasibility.

A major contention of the cable companies is that if they are required to provide leased access to ISPs, their incentives to invest in cable infrastructure improvements will be diminished to the disadvantage of consumers.[79] The argument, no doubt, is intended to tap into concerns expressed by the Chairman that the Commission should not take actions that retard or discourage investment in competing broadband technologies. This argument, however, should be rejected.

The Competitive Access Coalition is just as concerned as the Commission about encouraging competing broadband technologies to develop. Neither the empirical evidence nor logic suggests that granting access to ISPs will discourage cable companies from investing in broadband technology expansion. In fact, logic dictates the opposite conclusion.

VDPS, one of the signatories to these comments, noted, for example, in its initial comments in *Internet Ventures*, *supra*, that the Canadian communications regulatory authority mandates open access on cable facilities to ISP providers. A July 13, 1999 article in *Investor's Business Daily* reported that Microsoft has agreed to invest $400 million in Rogers Communications, a Canadian cable company that will be providing access to multiple ISP providers, including Microsoft.[80] Another article appearing in the same newspaper reported that AT&T itself is investing time and effort in developing capacity sufficient to handle the traffic from multiple ISP use of cable facilities.[81] One could argue that AT&T was simply hedging its

---

[79] *See*, e.g., *Internet Ventures, Inc.*, Case No. ICSR-5407-7, Comments of Comcast Cable Communications at 18; Comments of AT&T Corp. at 22; Comments of Time Warner Cable at 20.

[80] *Microsoft Forms Alliance on Interactive Television*, INVESTOR'S BUSINESS DAILY at A1 (July 13, 1999).

[81] *AT&T Working to Eliminate Glitches in Cable Net Access. Id.* at A4. The article describes AT&T's position as follows:

bets. However, if open access were really the investment disincentive that the cable companies claimed, they would simply decline to offer ISP service altogether. See also, Jeffrey K. Mackie Mason, "Investment in Cable Broadband Infrastructure: Open Access is not an Obstacle," Univ. of Mich., Nov. 5, 1999) *Attachment* 15 (hereinafter "*Mason Report*"). Among other things, Professor Mason notes the statement of the Canadian Cable Television Association that it "is committed to the implementation of third party access, in large part because it is in the cable companies' financial interests." *Mason Report* at 1 (quoting Reply Comments of the Canadian Cable Television Association in PN 98-14, 10/30/92, p. 2 (http://www.crtc.gc.ica/Internet/1998/8697/c12/02/ccta/981030ofc.doc)). (Emphasis added) Statements last year from AT&T CEO Armstrong also undercut the investment disincentive argument. An October 6, 1999 article in the *New York Times* reports that AT&T is now apparently willing to provide access to its broadband cable facilities, "but it cannot move quickly to open its cable networks because of a contract that obligates it to give exclusive cable access until 2002 to the Excite@Home Corporation."[82] AT&T has stated that it intends to provide such leased cable access only after its contract with Excite@Home expires.[83] When AT&T's exclusive arrangement with @Home ends in 2002, the *Wall Street Journal* reports AT&T CEO Michael Armstrong as saying, it will "welcome *as well*

If AT&T Corp. opens its cable network to rival Internet service providers, will it have enough bandwidth to go around?

AT&T says yes -- despite some early problems with cable access in the San Francisco Bay area. AT&T says its high-speed network can handle millions of potential users, though its system would need to be engineered differently.

"There is no capacity issue," said AT&T spokesman Mark Siegel. "The (cable) modems are traffic engineerable to accommodate any user demand that you're forecasting. *We plan to stay ahead of the curve.*"

Id. (emphasis added).

[82] Seth Schiesel, "AT&T Seeks to Deflect Internet Criticism," The New York Times (Oct. 6, 1999) <http://www.nytimes.com/library/tech/99/10/biztech/articles/06accesshtml>.

[83] *Id.*